Space/Flight Operable Miniature Six Axis Transducer, Phase II

Completed Technology Project (2010 - 2012)

Project Introduction

FUTEK will fully design and manufacture a sensor capable of measuring forces in and about each axis. The unit will measure forces up to 300 Newton's in the principle axes and measure moment forces about each axis up to 50 Newton meters. The overall design will be optimized for a multitude of applications in many different environments. As a result, the unit is capable of surviving temperatures ranging from -135

o

C and 125

o

C and will remain operable within specification between -80

o

C and 70

o

C. In addition, the sensor will be designed to accommodate vacuum conditions and all components will be covered with a protective coating. To further improve the unit, the size and weight has been minimized, making the sensor more ideal for dynamic applications and less obtrusive in assembly design. During the phase 1 contract, FUTEK has developed two operating prototypes to prove concept and feasibility. Also, different adhesives and coatings have been successfully tested beyond the survival temperatures expected in most applications. However, a continuation into phase 2 will be necessary to optimize the final design and meet all specifications and requirements. The design will be optimized to support specified loads with an acceptable factor of safety, while components are further researched and selected. In addition, the manufacturability and market of the product will be analyzed and assessed in order to commercialize such an advanced sensor.

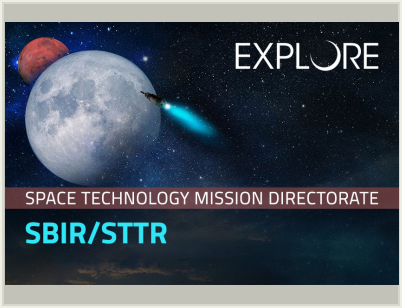

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Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

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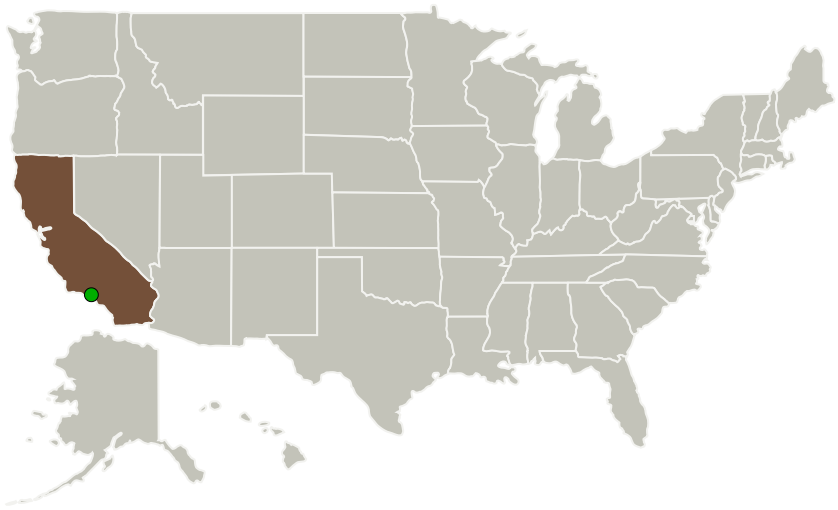
Completed Technology Project (2010 - 2012)

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Futek Advanced Sensor Technology, Inc.	Lead Organization	Industry	Irvine, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations
California

Project Transitions

March 2010: Project Start

May 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139485)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Futek Advanced Sensor Technology, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

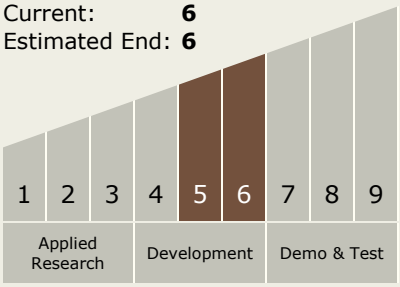
Carlos Torrez

Principal Investigator:

John P Vargas

Technology Maturity (TRL)

Start: **5**
Current: **6**
Estimated End: **6**



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Completed Technology Project (2010 - 2012)

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.3 Manipulation
    - TX04.3.3 Contact Dynamics Modeling

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System